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Arg Gly Leu Pro Gly Gln Leu Val Asp Ile Ala Cys Lys Val Cys Gln 50 55 60

Ala Tyr Leu Gly Gln Leu Glu His Glu Asp Ile Asp Thr Ser Ala Asp 65 70 75 80

Ala Val Glu Asp Leu Thr Glu Ala Glu Trp Glu Asp Leu Thr Gln Gln 85 90 95

Tyr Tyr Ser Leu Val His Gly Asp Ala Phe Ile Ser Asn Ser Arg Asn 100 105 110

Tyr Phe Ser Gln Cys Gln Ala Leu Leu Asn Arg Ile Thr Ser Val Asn 115 120 125

Pro Gln Thr Asp Ile Asp Gly Leu Arg Asn Ile Trp Ile Ile Lys Pro 130 135 140

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Thr Lys Phe Asp Ile Arg Gln Trp Phe Leu Val Thr Asp Trp Asn Pro 195 200 205

Leu Thr Ile Trp Phe Tyr Lys Glu Ser Tyr Leu Arg Phe Ser Thr Gln 210 215 220

Arg Phe Ser Leu Asp Lys Leu Asp Ser Ala Ile His Leu Cys Asn Asn 225 230 235 240

Ala Val Gln Lys Tyr Leu Lys Asn Asp Val Gly Arg Ser Pro Leu Leu 245 250 255

Pro Ala His Asn Met Trp Thr Ser Thr Arg Phe Gln Glu Tyr Leu Gln 260 265 270

Arg Gln Gly Arg Gly Ala Val Trp Gly Ser Val Ile Tyr Pro Ser Met 275 280 285

Lys Lys Ala Ile Ala His Ala Met Lys Val Ala Gln Asp His Val Glu 290 295 300

Pro Arg Lys Asn Ser Phe Glu Leu Tyr Gly Ala Asp Phe Val Leu Gly 305 310 315 320

Arg Asp Phe Arg Pro Trp Leu Ile Glu Ile Asn Ser Ser Pro Thr Met 325 330 335

His Pro Ser Thr Pro Val Thr Ala Gln Leu Cys Ala Gln Val Gln Glu 340 345 350

Asp Thr Ile Lys Val Ala Val Asp Arg Ser Cys Asp Ile Gly Asn Phe 355 360 365

Glu Leu Leu Trp Arg Gln Pro Val Val Glu Pro Pro Pro Phe Ser Gly 370 375 380

Ser Asp Leu Cys Val Ala Gly Val Ser Val Arg Arg Ala Arg Arg Gln 385 390 395 400

Val Leu Pro Val Cys Asn Leu Lys Ala Ser Ala Ser Leu Leu Asp Ala

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Gln Lys Tyr Ile Glu Thr Pro Leu Leu Ile Cys Asp Thr Lys Phe Asp 50 55 60

Ile Arg Gln Trp Phe Leu Val Thr Asp Trp Asn Pro Leu Thr Ile Trp 65 70 75 80

Phe Tyr Lys Glu Ser Tyr Leu Arg Phe Ser Thr Gln Arg Phe Ser Leu 85 90 95

Asp Lys Leu Asp Ser Ala Ile His Leu Cys Asn Asn Ala Val Gln Lys
100 105 110

Tyr Leu Lys Asn Asp Val Gly Arg Ser Pro Leu Leu Pro Ala His Asn 115 120 125

Met Trp Thr Ser Thr Arg Phe Gln Glu Tyr Leu Gln Arg Gln Gly Arg 130 135 140

Gly Ala Val Trp Gly Ser Val Ile Tyr Pro Ser Met Lys Lys Ala Ile 145 150 155 160

Ala His Ala Met Lys Val Ala Gln Asp His Val Glu Pro Arg Lys Asn 165 170 175

Ser Phe Glu Leu Tyr Gly Ala Asp Phe Val Leu Gly Arg Asp Phe Arg 180 185 190

Pro Trp Leu Ile Glu Ile Asn Ser Ser Pro Thr Met His Pro Ser Thr 195 200 205

Pro Val Thr Ala Gln Leu Cys Ala Gln Val Gln Glu Asp Thr Ile Lys

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Gln Lys Tyr Ile Glu Arg Pro Leu Leu Ile Phe Gly Thr Lys Phe Asp 50 55 60

Leu Arg Gln Trp Phe Leu Val Thr Asp Trp Asn Pro Leu Thr Val Trp 65 70 75 80

Phe Tyr Arg Asp Ser Tyr Ile Arg Phe Ser Thr Gln Pro Phe Ser Leu 85 90 95

Lys Asn Leu Asp Asn Ser Val His Leu Cys Asn Asn Ser Ile Gln Lys
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His Leu Glu Asn Ser Cys His Arg His Pro Leu Leu Pro Pro Asp Asn 115 120 125

Met Trp Ser Ser Gln Arg Phe Gln Ala His Leu Gln Glu Met Gly Ala 130 135 140

Pro Asn Ala Trp Ser Thr Ile Ile Val Pro Gly Met Lys Asp Ala Val 145 150 155 160 Ile His Ala Leu Gln Thr Ser Gln Asp Thr Val Gln Cys Arg Lys Ala 165 170 175

Ser Phe Glu Leu Tyr Gly Ala Asp Phe Val Phe Gly Glu Asp Phe Gln 180 185 190

Pro Trp Leu Ile Glu Ile Asn Ala Ser Pro Thr Met Ala Pro Ser Thr
195 200 205

Ala Val Thr Ala Arg Leu Cys Ala Gly Val Gln Ala Asp Thr Leu Arg 210 215 220

Val Val Ile Asp Arg Met Leu Asp Arg Asn Cys Asp Thr Gly Ala Phe 225 230 235 240

Glu Leu Ile Tyr Lys Gln Pro Val Thr Thr Ser Pro Ala Ser Thr Pro 245 250 255

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Asp Asn Pro Arg Phe Asn Leu Met Leu Gly Glu Arg Asn Arg Leu Pro 35 40 45

Phe Gly Arg Leu Gly His Glu Pro Gly Leu Met Gln Leu Val Asn Tyr

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Gln	Asn	Gly 115	Ile	His	Pro	Pro	Ile 120	His	Ser	Ser	Arg	Thr 125	Asp	Glu	Arg
Glu	Phe 130	Phe	Leu	Thr	Ser	Туг 135	Asn	Lys	Lys	Lys	Glu 140	Asp	Gly	Glu	Gly
Asn 145	Val	Trp	Ile	Ala	Lys 150	Ser	Ser	Ala	Gly	Ala 155	Lys	Gly	Glu	Gly	Ile 160
Leu	Ile	Ser	Ser	Glu 165	Ala	Thr	Glu	Leu	Leu 170	Asp	Phe	Ile	Asp	Asn 175	Gln
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Glu	Pro	Gly 195	His	Arg	Lys	Phe	Asp 200	Ile	Arg	Ser	Trp	Val 205	Leu	Val	Asp
His	Gln 210	Tyr	Asn	Ile	Tyr	Leu 215	Tyr	Arg	Glu	Gly	Val 220	Leu	Arg	Thr	Ala
Ser 225	Glu	Pro	Tyr	His	Thr 230	Asp	Asn	Phe	Gln	Asp 235	Lys	Thr	Cys	His	Leu 240

Glu Glu Gly Asn Glu Met Phe Phe Glu Glu Phe Asn Gln Tyr Leu Thr 260 265 270

Thr Asn His Cys Ile Gln Lys Glu Tyr Ser Lys Asn Tyr Gly Lys Tyr

245

Ser Ala Leu Asn Ile Thr Leu Glu Ser Ser Ile Leu Leu Gln Ile Lys 275 280 285

His Ile Ile Arg Ser Cys Leu Leu Ser Val Glu Pro Ala Ile Ser Thr 290 295 300

Arg His Leu Pro Tyr Gln Ser Phe Gln Leu Phe Gly Phe Asp Phe Met 305 310 315 320

Val Asp Glu Asp Leu Lys Val Trp Leu Ile Glu Val Asn Gly Ala Pro 325 330 335

Ala Cys Ala Gl<br/>n Lys Leu Tyr Ala Glu Leu Cys Gl<br/>n Gly Ile Val Asp $340 \hspace{1.5cm} 345 \hspace{1.5cm} 350 \hspace{1.5cm}$ 

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20 25 30

Ala Glu Leu Arg His Leu Asp Thr Gln Val Gln Arg Cys Glu Asp Ile 35 40 45

Leu Gln Gln Leu Gln Ala Val Val Pro Gln Ile Asp Met Glu Gly Asp 50 55 60

Arg Asn Ile Trp Ile Val Lys Pro Gly Ala Lys Ser Arg Gly Arg Gly 65 70 75 80

Ile Met Cys Met Asp His Leu Glu Glu Met Leu Lys Leu Val Asn Gly 85 90 95

Asn Pro Val Val Met Lys Asp Gly Lys Trp Val Val Gln Lys Tyr Ile Glu Arg Pro Leu Leu Ile Phe Gly Thr Lys Phe Asp Leu Arg Gln Trp Phe Leu Val Thr Asp Trp Asn Pro Leu Thr Val Trp Phe Tyr Arg Asp Ser Tyr Ile Arg Phe Ser Thr Gln Pro Phe Ser Leu Lys Asn Leu Asp Asn Ser Val His Leu Cys Asn Asn Ser Ile Gln Lys His Leu Glu Asn Ser Cys His Arg His Pro Leu Leu Pro Pro Asp Asn Met Trp Ser Ser Gln Arg Phe Gln Ala His Leu Gln Glu Met Gly Ala Pro Asn Ala Trp Ser Thr Ile Ile Val Pro Gly Met Lys Asp Ala Val Ile His Ala Leu Gln Thr Ser Gln Asp Thr Val Gln Cys Arg Lys Ala Ser Phe Glu Leu Tyr Gly Ala Asp Phe Val Phe Gly Glu Asp Phe Gln Pro Trp Leu Ile Glu Ile Asn Ala Ser Pro Thr Met Ala Pro Ser Thr Ala Val Thr Ala Arg Leu Cys Ala Gly Val Gln Ala Asp Thr Leu Arg Val Val Ile Asp Arg Met Leu Asp Arg Asn Cys Asp Thr Gly Ala Phe Glu Leu Ile Tyr Lys Gln Pro Val Thr Thr Ser Pro Ala Ser Thr Pro Arg Pro Ser Cys

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Asp Trp Asn Phe Tyr Trp Met Ser Val Gln Thr Ile Arg Asn Val Phe 35 40 45

Ser Val Glu Ala Gly Tyr Arg Leu Ser Asp Asp Gln Ile Val Asn His 50 55 60

Phe Pro Asn His Tyr Glu Leu Thr Arg Lys Asp Leu Met Val Lys Asn 65 70 75 80

Ile Lys Arg Tyr Arg Lys Glu Leu Glu Lys Glu Gly Ser Pro Leu Ala 85 90 95

Glu Lys Asp Glu Asn Gly Lys Tyr Leu Tyr Leu Asp Phe Val Pro Val

Thr Tyr Met Leu Pro Ala Asp Tyr Asn Leu Phe Val Glu Glu Phe Arg 115 120 125

Lys Ser Pro Ser Ser Thr Trp Ile Met Lys Pro Cys Gly Lys Ala Gln 130 135 140

Gly Lys Gly Ile Phe Leu Ile Asn Lys Leu Ser Gln Ile Lys Lys Trp 145 150 155 160

Ser Arg Asp Ser Lys Thr Ser Ser Phe Val Ser Gln Ser Asn Lys Glu 165 170 175

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<sup>&</sup>lt;212> DNA

<sup>&</sup>lt;213> Homo sapiens

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<211> 541

<212> PRT

<213> Homo sapiens

<400> 13

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Arg Gly Leu Pro Gly Gln Leu Val Asp Ile Ala Cys Lys Val Cys Gln 50 55 60

Ala Tyr Leu Gly Gln Leu Glu His Glu Asp Ile Asp Thr Ser Ala Asp 65 70 75 80

Ala Val Glu Asp Leu Thr Glu Ala Glu Trp Glu Asp Leu Thr Gln Gln 85 90 95

Tyr Tyr Ser Leu Val His Gly Asp Ala Phe Ile Ser Asn Ser Arg Asn 100 105 110

Tyr Phe Ser Gln Cys Gln Ala Leu Leu Asn Arg Ile Thr Ser Val Asn 115 120 125

Pro Gln Thr Asp Ile Asp Gly Leu Arg Asn Ile Trp Ile Ile Lys Pro 130 135 140

Ala Ala Lys Ser Arg Gly Arg Asp Ile Val Cys Met Asp Arg Val Glu 145 150 155 160

Glu Ile Leu Glu Leu Ala Ala Ala Asp His Pro Leu Ser Arg Asp Asn 165 170 175

Lys Trp Val Val Gln Lys Tyr Ile Glu Thr Pro Leu Leu Ile Cys Asp 180 185 190

Thr Lys Phe Asp Ile Arg Gln Trp Phe Leu Val Thr Asp Trp Asn Pro

195 200 205

Leu Thr Ile	Trp Phe	Tyr	Lys	${\tt Glu}$	Ser	Tyr	Leu	Arg	Phe	Ser	Thr	Gln
210			215					220				

- Arg Phe Ser Leu Asp Lys Leu Asp Ser Ala Ile His Leu Cys Asn Asn . 225 230 235 240
- Ala Val Gln Lys Tyr Leu Lys Asn Asp Val Gly Arg Ser Pro Leu Leu 245 250 255
- Pro Ala His Asn Met Trp Thr Ser Thr Arg Phe Gln Glu Tyr Leu Gln
  260 265 270
- Arg Gln Gly Arg Gly Ala Val Trp Gly Ser Val Ile Tyr Pro Ser Met 275 280 285
- Lys Lys Ala Ile Ala His Ala Met Lys Val Ala Gln Asp His Val Glu 290 295 300
- Pro Arg Lys Asn Ser Phe Glu Leu Tyr Gly Ala Asp Phe Val Leu Gly 305 310 315 320
- Arg Asp Phe Arg Pro Trp Leu Ile Glu Ile Asn Ser Ser Pro Thr Met 325 330 335
- His Pro Ser Thr Pro Val Thr Ala Gln Leu Cys Ala Gln Val Gln Glu 340 345 350
- Asp Thr Ile Lys Val Ala Val Asp Arg Ser Cys Asp Ile Gly Asn Phe 355 360 365
- Glu Leu Leu Trp Arg Gln Pro Val Val Glu Pro Pro Pro Phe Ser Gly 370 375 380
- Ser Asp Leu Cys Val Ala Gly Val Ser Val Arg Arg Ala Arg Arg Gln 385 390 395 400
- Val Leu Pro Val Cys Asn Leu Lys Ala Ser Ala Ser Leu Leu Asp Ala 405 410 415
- Gln Pro Leu Lys Ala Arg Gly Pro Ser Ala Met Pro Asp Pro Ala Gln
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Gly Pro Pro Ser Pro Ala Leu Gln Arg Asp Leu Gly Leu Lys Glu Glu 435 440 445

Lys Gly Leu Pro Leu Ala Leu Leu Ala Pro Leu Arg Gly Ala Ala Glu 450 455 460

Ser Gly Gly Ala Ala Gln Pro Thr Arg Thr Lys Ala Ala Gly Lys Val 465 470 475 480

Glu Leu Pro Ala Cys Pro Cys Arg His Val Asp Ser Gln Ala Pro Asn 485 490 495

Thr Gly Val Pro Val Ala Gln Pro Ala Lys Ser Trp Asp Pro Asn Gln 500 505 510

Leu Asn Glu His Pro Leu Glu Pro Val Leu Arg Ser Leu Lys Thr Ala 515 520 525

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<212> PRT

<213> Homo sapiens

<400> 14

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Glu Trp Glu Asp Leu Thr Gln Gln Tyr Tyr Ser Leu Val His Gly Asp
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Ala Phe Ile Ser Asn Ser Arg Asn Tyr Phe Ser Gln Cys Gln Ala Leu 35 40 45

Leu Asn Arg Ile Thr Ser Val Asn Pro Gln Thr Asp Ile Asp Gly Leu 50 55 60

Arg Asn Ile Trp Ile Ile Lys Pro Ala Ala Lys Ser Arg Gly Arg Asp 65 70 75 80

Ile Val Cys Met Asp Arg Val Glu Glu Ile Leu Glu Leu Ala Ala Ala 85 90 95

Asp His Pro Leu Ser Arg Asp Asn Lys Trp Val Val Gln Lys Tyr Ile 100 105 110

Glu Thr Pro Leu Leu Ile Cys Asp Thr Lys Phe Asp Ile Arg Gln Trp
115 120 125

Phe Leu Val Thr Asp Trp Asn Pro Leu Thr Ile Trp Phe Tyr Lys Glu 130 135 140

Ser Tyr Leu Arg Phe Ser Thr Gln Arg Phe Ser Leu Asp Lys Leu Asp 145 150 155 160

Ser Ala Ile His Leu Cys Asn Asn Ala Val Gln Lys Tyr Leu Lys Asn 165 170 175

Asp Val Gly Arg Ser Pro Leu Leu Pro Ala His Asn Met Trp Thr Ser 180 185 190

Thr Arg Phe Gln Glu Tyr Leu Gln Arg Gln Gly Arg Gly Ala Val Trp
195 200 205

Gly Ser Val Ile Tyr Pro Ser Met Lys Lys Ala Ile Ala His Ala Met 210 215 220

Lys Val Ala Gln Asp His Val Glu Pro Arg Lys Asn Ser Phe Glu Leu 225 230 235 240

Tyr Gly Ala Asp Phe Val Leu Gly Arg Asp Phe Arg Pro Trp Leu Ile 245 250 255

Glu Ile Asn Ser Ser Pro Thr Met His Pro Ser Thr Pro Val Thr Ala 260 265 270

Gln Leu Cys Ala Gln Val Gln Glu Asp Thr Ile Lys Val Ala Val Asp 275 280 285

Arg Ser Cys Asp Ile 290

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Arg Gln Trp Phe Leu Val Thr Asp Trp Asn Pro Leu Thr
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Ser Phe Glu Leu Tyr Gly Ala Asp Phe Val
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Val Cys Met Asp Arg Val Glu
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Pro Leu Thr Ile Trp Phe Tyr Lys Glu Ser Tyr Leu Arg Phe Ser Thr
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Gln Arg Phe Ser Leu Asp Lys Leu Asp Ser Ala Ile His Leu Cys Asn
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Asn
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<212> PRT
<213> Rattus norvegicus
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Asp Thr Lys Phe Asp Ile Arg Gln Trp Phe Leu Val Thr Asp Trp Asn
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Gln Arg Phe Ser Leu Asp Lys Leu Asp Ser Ala Ile His Leu Cys Asn
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Asn

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Ala Gln Val Gln Glu Asp Thr Ile Lys Val
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Leu Pro Ala Cys Pro Cys Arg His Val Asp Ser Gln Ala Pro Asn Thr
Gly Val Pro Val Ala Gln Pro Ala Lys Ser Trp Asp Pro Asn Gln Leu
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Asn Ala His Pro Leu Glu Pro Val Leu Arg
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Ser
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      330
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<210> 23

<400> 26

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- Phe Pro Gly Ser Tyr Glu Ile Thr Arg Lys Asp Leu Leu Trp Lys Asn 20 25 30
- Ile Lys Arg Gln Gln Lys Asp Phe Gly Arg Lys Gly Asp Glu Phe Asp 35 40 45
- Phe Leu Pro Arg Thr Phe Ile Leu Pro Thr Asp Leu Arg Glu Phe Val 50 55 60
- Asp Tyr Phe Glu Lys Arg Glu Arg Glu Gly Gln Asp Asn Thr Trp Ile 65 70 75 80
- Val Lys Pro Ser Ala Ser Ala Arg Gly Arg Gly Ile Arg Ile Thr Asn 85 90 95
- Lys Leu Ser Gln Ile Pro Lys Trp Val Asp Asp Phe Lys Asp Asn Pro 100 105 110
- Phe Val Ser Gln Ile Gln Arg Arg Pro Leu Val Val Gln Lys Tyr Ile 115 120 125
- Glu Arg Pro Leu Leu Ile Asp Gly Glu Asp Val Gly Lys Arg Lys Phe 130 135 140
- Asp Leu Arg Leu Tyr Val Leu Val Thr Ser Val Asp Pro Leu Arg Ile 145 150 155 160
- Tyr Val Tyr Arg Glu Gly Leu Leu Arg Phe Ala Ser Val Lys Tyr Ser 165 170 175
- Pro Leu Ser Asp Leu Asp Asp Val Glu Met His Leu Thr Asn Tyr Ser 180 185 190
- Ile Gln Lys Lys Ser Ser Asn Tyr Ser Arg Leu Asn Glu Asp Tyr Asn 195 200 205
- Glu Pro Val Gly His Lys Trp Ser Leu Gln Asn Leu Trp Leu Tyr Leu 210 215 220
- Glu Glu Met Gly Ile Asp Lys Glu Glu Ile Trp Leu Gln Ile Glu Ser

225 230 235 240

Ile Ile Ile Lys Thr Ile Leu Ala Ala Glu Ile Val Glu Ala Ser Arg
245 250 255

Leu Asn Val Ala Pro Leu Tyr Asn Cys Phe Glu Leu Tyr Gly Phe Asp 260 265 270

Ile Met Leu Lys Trp Asp Asp Glu Asn Leu Lys Pro Trp Leu Leu 275 280 285

Glu Val Asn Ala Ser Pro Ser Leu His Ser Thr Thr Lys Leu Asp Ala 290 295 300

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Val Val Pro Pro Asp Lys Glu Lys Asp Ile 325 330

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<211> 2241

<212> DNA

<213> Homo sapiens

<400> 27

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